

WHAT IS CLAIMED IS:

1. A system for managing access to IP multicast traffic, comprising:
a join request manager within an access router, the access router comprising a
central processing unit (CPU) and a memory unit and operable to replicate multicast
5 traffic flows for communication to one or more user devices within user systems
coupled to the access router using a link, the join request manager operable to:
receive a request to receive a multicast traffic flow, the request being
received from one of the user devices within one of the user systems; and
deny the request if a system metric is above a threshold.
- 10 2. The system of Claim 1, wherein the system metric is the utilization of
the CPU.
3. The system of Claim 2, wherein the utilization of the CPU is measured
15 in terms of a percentage of a maximum processing capacity of the CPU.
4. The system of Claim 2, wherein utilization of the CPU above the
threshold impairs operation of the access router.
- 20 5. The system of Claim 1, wherein the system metric is the usage of the
memory unit.
6. The system of Claim 5, wherein the usage of the memory unit is
measured in terms of a percentage of a maximum storage capacity of the memory
25 unit.
7. The system of Claim 5, wherein usage of the memory unit above the
threshold impairs operation of the access router.

8. The system of Claim 1, wherein the system metric is an aggregate multicast bandwidth output of the access router.

9. The system of Claim 8, wherein the threshold is equal to a maximum aggregate multicast bandwidth output of the access router minus a bandwidth output required to deliver the multicast traffic flow to the user device.

10. The system of Claim 9, wherein the maximum aggregate multicast bandwidth output of the access router is equal to a maximum aggregate bandwidth output minus an aggregate bandwidth output reserved for unicast traffic.

11. The system of Claim 9, wherein the join request manager determines the bandwidth output required to deliver the multicast traffic flow to the user device by accessing a channel profile corresponding to the multicast traffic flow contained in an authentication, authorization, and accounting (AAA) server.

12. The system of Claim 1, wherein the system metric is an aggregate multicast bandwidth over a link coupling the user system to the access router.

13. The system of Claim 12, wherein the threshold is equal to a maximum aggregate multicast bandwidth over the link minus a bandwidth required to deliver the multicast traffic flow to the user device.

14. The system of Claim 13, wherein the maximum aggregate multicast bandwidth over the link is equal to a maximum aggregate link bandwidth minus an aggregate link bandwidth output reserved for unicast traffic.

15. The system of Claim 13, wherein the join request manager determines the maximum aggregate multicast bandwidth over the link by accessing user system bandwidth information in a user system profile corresponding to the user system contained in an authentication, authorization, and accounting (AAA) server.

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16. The system of Claim 13, wherein the join request manager determines the bandwidth required to deliver the multicast traffic flow to the user device by accessing a channel profile corresponding to the multicast traffic flow contained in an authentication, authorization, and accounting (AAA) server.

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17. The system of Claim 1, wherein the request is an Internet group management protocol (IGMP) join request.

18. The system of Claim 1, wherein the join request manager denies the request by dropping one or more packets containing the request.

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19. A method for managing access to IP multicast traffic, comprising:
receiving a request to receive a multicast traffic flow, the request being
received from a user device within a user system coupled to an access router using a
link, the access router comprising a central processing unit (CPU) and a memory unit;
5 and
denying the request if a system metric is above a threshold.

20. The method of Claim 19, wherein the system metric is the utilization
of the CPU.
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21. The method of Claim 20, wherein the utilization of the CPU is
measured in terms of a percentage of a maximum processing capacity of the CPU.

22. The method of Claim 20, wherein utilization of the CPU above the
15 threshold impairs operation of the access router.

23. The method of Claim 19, wherein the system metric is the usage of the
memory unit.

24. The method of Claim 23, wherein the usage of the memory unit is
measured in terms of a percentage of a maximum storage capacity of the memory
unit.
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25. The method of Claim 23, wherein usage of the memory unit above the
25 threshold impairs operation of the access router.

26. The method of Claim 19, wherein the system metric is an aggregate
multicast bandwidth output of the access router.

27. The method of Claim 26, wherein the threshold is equal to a maximum aggregate multicast bandwidth output of the access router minus a bandwidth output required to deliver the multicast traffic flow to the user device.

5 28. The method of Claim 27, wherein the maximum aggregate multicast bandwidth output of the access router is equal to a maximum aggregate bandwidth output minus an aggregate bandwidth output reserved for unicast traffic.

29. The method of Claim 27, wherein the join request manager determines
10 the bandwidth output required to deliver the multicast traffic flow to the user device by accessing a channel profile corresponding to the multicast traffic flow contained in an authentication, authorization, and accounting (AAA) server.

30. The method of Claim 19, wherein the system metric is an aggregate
15 multicast bandwidth over a link coupling the user system to the access router.

31. The method of Claim 30, wherein the threshold is equal to a maximum aggregate multicast bandwidth over the link minus a bandwidth required to deliver the multicast traffic flow to the user device.

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32. The method of Claim 31, wherein the maximum aggregate multicast bandwidth over the link is equal to a maximum aggregate bandwidth minus an aggregate bandwidth output reserved for unicast traffic.

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33. The method of Claim 31, wherein the join request manager determines the maximum aggregate multicast bandwidth over the link by accessing user system bandwidth information in a user system profile corresponding to the user system contained in an authentication, authorization, and accounting (AAA) server.

34. The method of Claim 31, wherein the join request manager determines the bandwidth required to deliver the multicast traffic flow to the user device by accessing a channel profile corresponding to the multicast traffic flow contained in an authentication, authorization, and accounting (AAA) server.

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35. The method of Claim 19, wherein the request is an Internet group management protocol (IGMP) join request.

36. The method of Claim 19, wherein the join request manager denies the
10 request by dropping one or more packets containing the request.

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37. A system for managing access to IP multicast traffic, comprising:

a join request manager within an access router, the access router comprising a central processing unit (CPU) and a memory unit and operable to replicate multicast traffic flows for communication to one or more user devices within user systems coupled to the access router using a link, the join request manager operable to:

receive an Internet group management protocol (IGMP) join request, the request being received from one of the user devices within one of the user systems and communicated using one or more packets; and

drop the one or more packets if:

utilization of the CPU is above a first threshold, the utilization of the CPU being measured in terms of a percentage of a maximum processing capacity of the CPU, the utilization of the CPU above the first threshold impairing operation of the access router;

usage of the memory unit is above a second threshold, the usage of the memory unit being measured in terms of a percentage of a maximum storage capacity of the memory unit, the utilization of the CPU above the second threshold impairing operation of the access router;

an aggregate multicast bandwidth output of the access router is above a third threshold equal to a maximum aggregate multicast bandwidth output of the access router minus a bandwidth output required to deliver the multicast traffic flow to the user device, the maximum aggregate multicast bandwidth output of the access router being equal to a maximum aggregate bandwidth output minus an aggregate bandwidth output reserved for unicast traffic; or

an aggregate multicast bandwidth over the link is above a fourth threshold equal to a maximum aggregate multicast bandwidth over the link minus a bandwidth required to deliver the multicast traffic flow to the user device, the maximum aggregate multicast

bandwidth over the link being equal to a maximum aggregate bandwidth minus an aggregate bandwidth output reserved for unicast traffic.

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